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| 09/929,037 | 08/15/2001 | Toru Koizumi | 03500.015698, | 1876 |
| 5514 | 7590 | 12/08/2008 | EXAMINER | |
| FITZPATRICK CELLA HARPER & SCINTO | | | QUIETT, CARRAMAH J | |
| 30 ROCKEFELLER PLAZA | | | ART UNIT | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | |
|------------------------------|---------------------------------------|---------------------------------------|
| Office Action Summary | Application No. 09/929,037 | Applicant(s) KOIZUMI ET AL. |
| | Examiner Carrarah J. Quiett | Art Unit 2622 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 09/23/2008.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 5-24, 26 and 27 is/are pending in the application.
 4a) Of the above claim(s) 9-16 and 21-24 is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 5-8, 17-20, and 26-27 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 15 August 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____

5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/23/2008 has been entered.

Response to Amendment

2. The amendment(s), filed on 09/23/2008, have been entered and made of record. Claims 5-24 and 26-27 are pending, of which claims 9-16 and 21-24 are withdrawn from consideration. The Applicant has canceled claims 1-4, 25 and 28.

Response to Arguments

3. Applicant's arguments filed 09/23/2008 have been fully considered but they are not persuasive.

For claims 5-8, and 26, Applicant's assert that Hamasaki, in view of Suzuki do not teach a drive circuit to output a pulse wave form signal for controlling said transfer switch so that a time during which said transfer switch changes from an ON state to an OFF state becomes longer than a time during which said transfer switch changes from the OFF state to the ON state. The Examiner respectfully disagrees. In fig. 11A, Suzuki illustrates transfer pulse lines V₁~V₄ for sending transfer pulses to the vertical CCD 21 and the transfer gate electrodes 25. Please read

col. 1, lines 28-44; col. 6, lines 47-52; and col. 7, lines 7-14. Please note that the transfer pulse wave forms originate from a drive circuit which consists of the components (refs. 2-4, 10-11) illustrated in fig. 1; col. 6, lines 58-65). The pulse wave form signal (V_1 , V_3 ; see fig. 4) controls the transfer switch so that a time during which said transfer switch changes from an ON state (V_L) to an OFF state (V_M/V_H) becomes longer than (readout, t_2-t_7) a time during which said transfer switch changes from the OFF state to the ON state (t_1-t_2 ; col. 9, lines 15-63).

The Applicants further assert that Suzuki does not show the time it takes to change between the two voltage levels. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "the time it takes to change between the two voltage levels") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

For claims 17-20 and 27, Applicants assert that the motivation rationale for modifying the primary reference, Gowda et al. is incorrect. The Examiner respectfully disagrees. In col. 7, lines 16-23 and col. 8, lines 29-40, Gowda teaches a driver with a fall speed V_{off} for changing said transfer switch from an ON state to an OFF state has a relation 1.2, 1.8, 2.5, 3.3, or 5 volts on the order of 2 μ sec. The additional feature for changing said transfer switch from an ON state to an OFF state has a relation $10 V/\mu sec > V_{off}$, would allow high-speed reading.

The Examiner respectfully maintains the rejections to claims 5-8, 17-20, and 26-27.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. **Claims 5-8 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamasaki et al. (U.S. Patent #5,187,583) in view of Suzuki et al. (U.S. Patent #5,828,407).

For **claim 5**, Hamasaki discloses an image pickup device (fig. 1) comprising:

a plurality of pixels (ref. 5 – FDA) each including a photoelectric conversion unit (fig. 1, not numbered; col. 3, lines 8-19), a semiconductor area (1 – ST) to which a signal from said photoelectric conversion unit is transferred (col. 3, lines 21-35), a transfer switch (2 – OG) to transfer the signal from said photoelectric conversion unit to said semiconductor area (col. 3, lines 21-35), and a read unit (ref. 4) to read out the signal from said semiconductor area (col. 3, lines 21-35); and

a drive circuit coupled to said pixels (ref. 8; col. 3, lines 20-39).

However, Hamasaki does not expressly disclose a drive circuit to output a pulse wave form signal for controlling said transfer switch so that a time during which said transfer switch changes from an ON state to an OFF state becomes longer than a time during which said transfer switch changes from the OFF state to the ON state.

In a similar field of endeavor, Suzuki discloses a transfer switch (fig. 11A, transfer pulse lines V₁~V₄, 21, 25; col. 1, lines 28-44; col. 6, lines 47-52; col. 7, lines 7-14), and a drive circuit (fig. 1, refs. 2-4, 10-11; col. 6, lines 58-65) to output a pulse wave form signal (transfer pulses V₁, V₃; see fig. 4) for controlling said transfer switch so that a time during which said transfer switch changes from an ON state (V_L) to an OFF state (V_M/V_H) becomes longer than (readout,

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t2-t7) a time during which said transfer switch changes from the OFF state to the ON state (t1-t2; col. 9, lines 15-63). Also in Suzuki, please see figs. 3-5. In light of the teaching of Suzuki, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the driving circuit of Hamasaki in order to improve the dynamic range of the image thereby realizing high charge transfer efficiency without causing blooming (Suzuki, col. 4, lines 49-56).

For **claim 6**, Hamasaki, as modified by Suzuki, discloses the device wherein said read unit includes an amplification transistor (fig. 2, ref. 4) for amplifying and outputting the signal in said semiconductor area (col. 3, line 8-19).

For **claim 7**, Hamasaki, as modified by Suzuki, Hamasaki teaches the embedded photodiode in a photoelectric conversion unit (fig. 1; col. 3, line 8-19).

For **claim 8**, Hamasaki, as modified by Suzuki, discloses the device (Suzuki, fig. 1) further comprising an analog/digital conversion circuit (ref. 6) *adapted to** convert a signal from each of said plurality of pixels into a digital signal (col. 7, lines 1-3), a signal processing circuit (ref. 7) *adapted to** process the signal from said analog/digital conversion circuit (col. 7, lines 1-5), and a recording circuit (ref. 9) *adapted to** record the signal processed by said signal processing circuit (col. 7, lines 1-7).

Regarding **claim 26**, this claim is a method claim corresponding to the apparatus claim 5. Therefore, claim 26 is analyzed and rejected as previously discussed with respect to claim 5.

6. **Claims 17-20 and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gowda et al. (U.S. Patent #6,344,877).

For **claim 17**, Gowda discloses an image pickup device (fig. 2) comprising:

a plurality of pixels (fig. 2, ref. 30; col. 4, lines 1-7) each including a photoelectric conversion unit (fig. 3, ref. 26), a semiconductor area to which a signal from said photoelectric conversion unit is transferred (col. 4, line 62 – col. 5, line 18), a transfer switch (fig. 3, ref. 22) to transfer the signal from said photoelectric conversion unit to said semiconductor area (col. 5, lines 19-59), and a read unit (fig. 3, ref. 23) to read out the signal from said semiconductor area (col. 5, line 50-59); and a drive circuit coupled to said pixels (fig. 2, ref. 14; col. 4, lines 27-62) to output a signal to control said transfer switch so that a fall speed V_{off} for changing said transfer switch from an ON state to an OFF state has a relation 1.2, 1.8, 2.5, 3.3, or 5 volts on the order of 2 μ sec (col. 7, lines 16-23 and col. 8, lines 29-40).

However, Gowda does not expressly teach that changing said transfer switch from an ON state to an OFF state has a relation $10 \text{ V}/\mu\text{sec} > V_{off}$.

The Examiner takes Official Notice that it is well known in the art for a drive circuit to output a signal to control a transfer switch so that a fall speed V_{off} for changing the transfer switch from an ON state to an OFF state has a relation $10 \text{ V}/\mu\text{sec} > V_{off}$. *It is noted by the Examiner that because Applicant failed to timely traverse the old and well-known statement, it is now taken as Admitted Prior Art (see MPEP 2144.03(c)).* Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the driving circuit of Gowda in order to facilitate high-speed imaging.

For **claim 18**, Gowda discloses the device wherein said read unit includes an amplification transistor (fig. 3, ref. 23) for amplifying and outputting the signal in said semiconductor area (col. 5, lines 50-59).

For **claim 19**, Gowda discloses the device wherein said photoelectric conversion unit includes an embedded photodiode (fig. 3, ref. 26; col. 4, line 62 – col. 5, line 18).

For **claim 20**, Gowda discloses the device further comprising
an analog/digital conversion circuit (fig. 2, ref. 52) *adapted to** convert a signal from each of said plurality of pixels into a digital signal (col. 4, lines 12-15).
a signal processing circuit (fig. 2, ref. 44) *adapted to** process the signal from said analog/digital conversion circuit (col. 4, lines 59-61), and
a recording circuit (fig. 2, after ref. 44) *adapted to** record the signal processed by said signal processing circuit – inherently, because after ref. 44 (col. 4, lines 59-61), the image signals are transferred to processing/image storage electronics. Please see fig. 2.

Regarding **claim 27**, this claim is a method claim corresponding to the apparatus claim 17. Therefore, claim 27 is analyzed and rejected as previously discussed with respect to claim 17.

***Note:** The Applicant's "*capable of*" language and "*adapted to*" language as used in the claims broadens the scope of the claims. The MPEP states that, "Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by language that does not limit a claim to a particular structure." (MPEP 2111.04 [R-3]) In other words at the U.S. Patent and Trademark Office, if a limitation is written with "*capable of*" language and/or "*adapted to*" language, a reference is deemed to meet that limitation if the reference discusses the same element that, although not actually performing the claimed

function, is **structurally capable of** performing it. Accordingly, the Examiner *will not* give a limitation with “*capable of*” language and/or “*adapted to*” language patentable weight.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carramah J. Quiett whose telephone number is (571)272-7316. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, NgocYen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. J. Q./
Examiner, Art Unit 2622
December 5, 2008

/Ngoc-Yen T. VU/
Supervisory Patent Examiner, Art Unit 2622

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